Section 1 **MANAGEMENT OF CHANGE (MOC)**

ABU:	Plant:	Year:
D&R	4 Crude	2011

MOC No:	Originator:	Date Issued:	Passport No:	EWO No:
24255	Lee II, Gerald W.	11/22/2011		

Section 2 Reviewer:	MOC Category:	PSM:	MOC Type:	Expiration Date:	Other Temporary Reason
Preciado, Silvano E.	S/D		Temporary	12/31/2016	

Project/Equipment Title: UT Monitor 8" 4 S/C Piping from C-1100 to P-1149/A (955-007-001)

Description of Change:

Inspections will monitor 8" 4 SIDECUT 955-007-001 piping circuit thickness from C-1100 to P-1149/A and replace as needed at next S/D opportunity.

MOC will be required if the change will:

- ☐ Cause the use of different feed, chemicals or catalysts?
- ☑ Cause the use of different process conditions, process control, instrumentation, and protective devices or affect upstream/downstream plants?
- ☐ Cause the use of new or modified equipment [which is other than inkind]?
- ☐ Alter equipment siting, building, trailer locations, roads or fire protection?
- ☐ Require modifying existing and/or developing new procedures?

Section 2 ☐ Simultaneously Begin Construction and Start-up

Stage 1	Pre-Implementation	Dept./Person Responsible	Date Complete	Completed By	References
	Design Review	Gish, Kurt E.			
	Process Engineering Review				
	Instrumentation Review				
	Control System Review				
	Utilities Review				
	Environmental/Regulatory Review				
	Safety/Regulatory Review				
	Building Permits Review				
	Mechanical Review	Leeds, Laura	1/5/2012	Leeds, Laura	
	Inspection Review	Beauregard, John T.	12/2/2011	Beauregard, John T.	
	Metallurgy Review	Prasad, Praneil-Maharaj	#########	Prasad, Praneil-Maharaj	
	Contruction Review				
	Leak Seal Review				
	Relief System Review				
	Infrastructure Review				
	PHA/HSE Review	Preciado, Silvano E.			

Authorization to Implement Change (Begin Construction): Approver: Date:

Stage 2	Pre-Startup	Dept./Person Responsible	Date Complete	Completed By	References
	Procedures Review				
	Communication/Training				
	Pre Start-up Safety Review				

Authorization to Start-Up Change: Approver: Date:

Extension of Temporary Change Approved By: Approver: | Expiration Date: | Extention Reason

Stage 3	Post-Startup	Dept./Person Responsible	Date Complete	Completed By	References
	Communication/Training				
	Process Safety Information				

Change in Place - Reviews, Documentation & Testing Complete: Approver: | Date:

MOC Cancelled: Approver: Date: Cancellation Reason:

Note 1: Emergency request for change should be routed by the Approver on the next working day | Retain Original in Division for five Years

DESIGNS REVIEW CHECKLIST

You have been assigned a Design Engineering Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 24255
Filing Reference
Person Responsible Gish, Kurt E.
Completed by
Date Completed

Project/Equipment Description:

Inspections will monitor 8" 4 SIDECUT 955-007-001 piping circuit thickness from C-1100 to P-1149/A and replace as needed at next S/D opportunity.

*When possible include copies of documents referenced in the summary.

DESIGNS REVIEW CHECKLIST

You have been assigned a Design Engineering Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 24255
Filing Reference
Person Responsible Gish, Kurt E.
Completed by
Date Completed

Project/Equipment Description:

Inspections will monitor 8" 4 SIDECUT 955-007-001 piping circuit thickness from C-1100 to P-1149/A and replace as needed at next S/D opportunity.

ENGINEERING REVIEW

- ☐ BIN Best Practic
- ☐ Civil & Structural
- ☐ Equipment Data Sheet
- ☐ Equipment Specification
- ☐ Fire Protection
- ☐ Hot Tap
- ☐ P&ID's Change due to New / Modified equipment
- ☐ P&ID's Change - Field condition not matching existing P&ID
- ☐ Plot Plan
- ☐ Seismic
- ☐ SIS Update
- ☐ Temporary Leak Repair

EQUIPMENT REVIEW

- ☐ Columns & Pressure Vessels
- ☐ Compressor, Blowers & Mechanical Equipment
- ☐ Concrete & Steel Structure, Walks and Stair
- ☐ Control Rooms & Building
- ☐ Exchangers, Condensers, Heaters & Cooling Tower
- ☐ Facilities & Siting
- ☐ Foundation
- ☐ Furances & Boilers
- ☐ Honeywell
- ☐ Honeywell Process Simulator
- ☐ HVAC
- ☐ Instrumentation
- ☐ Insulation
- ☐ Noise
- ☐ Piping
- ☐ Pumps & Drivers
- ☐ Relief & Venting Systems
- ☐ Sewers, Roads & Miscellaneous
- ☐ Tanks
- ☐ Update Refinery Relief Study
- ☐ Utility Systems

SUMMARY OF REVIEW*

*When possible include copies of documents referenced in the summary.

DESIGNS REVIEW CHECKLIST

You have been assigned a Design Engineering Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 24255
Filing Reference
Person Responsible Gish, Kurt E.
Completed by
Date Completed

Project/Equipment Description:

Inspections will monitor 8" 4 SIDECUT 955-007-001 piping circuit thickness from C-1100 to P-1149/A and replace as needed at next S/D opportunity.

☐ HVAC

*When possible include copies of documents referenced in the summary.

MECHANICAL & Q.A. REVIEW CHECKLIST

You have been assigned a Mechanical & Q.A. Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 24255
Filing Reference
Person Responsible Leeds, Laura
Completed By Leeds, Laura
Date Completed 1/5/2012

Project/Equipment Description:

Inspections will monitor 8" 4 SIDECUT 955-007-001 piping circuit thickness from C-1100 to P-1149/A and replace as needed at next S/D opportunity.

MECHANICAL:

- ☐ Alarm/Sampling Requirements
- ☐ Civil/Structual Engineering Requirements
- ☐ Electrical Engineering Requirements
- ☐ Instrument/Control Engineering Requirements
- ☐ Normal Control Requirements Equipment Specification and Rating
- ☐ Relief and Pressure Relief Devices Setting and Capacity
- ☐ Utilities Connection Permits

REQUIREMENT:

- ☐ API Standards
- ☐ ASME Codes & Standards
- ☑ Inspection/Monitoring Requirements
- ☐ Process Flow/Piping Drawings

Q.A.:

- ☐ ASTM Standards
- ☐ Control & Monitoring Requirements
- ☐ Fitness for Service Evaluation
- ☐ Honeywell Process Simulator
- ☐ IMI Machinery Condition
- ☐ Mechanical Integrity
- ☐ Mechanical Integrity Program
- ☐ MFG-5545, Drafting Work Request attached, if required
- ☐ Positive Materials Indentification
- ☐ Preventative Maintenance Requirement
- ☐ Pre Start-up Safety Review
- ☐ Process Safety Information Limits
- ☐ SOCO Tags
- ☐ UT Testing

SUMMARY OF REVIEW*

External inspection of piping has not been reliable in the past for predicting thickness and failure rates at these temperatures. Recommended that external corrosion probes with wireless technology be installed on line for continuous data collection.

Consistently monitoring 4S/C piping is better than random API inspection. But continous corrosion probes should be installed at earliest convenience for future S/D input

*When possible include copies of documents referenced in the summary.

INSPECTION REVIEW CHECKLIST

You have been assigned a Inspection Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 24255
Filing Reference
Person Responsible Beauregard, John T.
Completed By Beauregard, John T.
Date Completed 12/2/2011

Project/Equipment Description:

Inspections will monitor 8" 4 SIDECUT 955-007-001 piping circuit thickness from C-1100 to P-1149/A and replace as needed at next S/D opportunity.

INSPECTION:

- ☐ Additional Surveillance Required
- ☐ API Standards
- ☐ ASME Codes & Standards
- ☐ ASTM Standards
- ☐ Control Monitoring Requirements
- ☐ Electrical Inspection
- ☐ Fitness for Service Evaluation
- ☐ Honeywell
- ☐ Honeywell Process Simulator
- ☐ Inspection/Monitoring Requirements
- ☐ Non-Destructive Examination
- ☐ Normal Control Requirements
- ☐ Positive Materials Indentification
- ☐ Relief and Pressure Relief Devices Setting and Capacity
- ☐ Texas Nuclear (Metallurgy)
- ☐ UT Testing
- ☐ VOC Tagging Requirements

SUMMARY OF REVIEW*

Inspection will provide a drawing with monitoring locations.
For the P-1149 suction piping t(min):
1.8" pipe:
a.Pressure t(min) = 0.018 inch
b.Structural t(min) = 0.036 inch
2.10" pipe:
a.Pressure t(min) = 0.022 inch
b.Structural t(min) = 0.036 inch

So, I would use the 0.036 inch as the ultimate t(min) for this section of pipe. If piping get below 0.100 inches, we should consider some sort of clamp or wrap. After talking to inspections, this might also be a good location for a corrosion probe.

Hope this helps,

If you have any questions, please do not hesitate to contact me.

Thanks for the help,
Patrick Murphy

*When possible include copies of documents referenced in the summary.

METALLURGY REVIEW CHECKLIST

You have been assigned a Metallurgy Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 24255
Filing Reference
Person Responsible Prasad, Praneil-Maharaj
Completed by Prasad, Praneil-Maharaj
Date Completed 11/28/2011

Project/Equipment Description:

Inspections will monitor 8" 4 SIDECUT 955-007-001 piping circuit thickness from C-1100 to P-1149/A and replace as needed at next S/D opportunity.

Refinery Process Stream: #4 Sidecut

Service Description: Hydrocarbons

Process: Hydrocarbon

Other:

Operating Tempature: **Operating Pressure:**

Design Tempature: **Design Pressure:**

Product Form: **Piping Classification:**

Equipment **Other:**

New Material Type: **Other:**

Connection for Piping Specification: ☐ **Stress Relieved**

Piping Specification Comment:

If Required, what is stress relieving temperature: **and Time**

Exchanger Bundle (Check all Applicable)

☐ **U-Bend Tube Bundle** ☐ **U-Bend Area Stress Relieved?**

☐ **Finned Tube Bundle** ☐ **Finned Area Stress Relieved?**

☐ **Straight Tube**

☐ **Tube Sheet and tubes made of different alloys?** **Explain:**

☐ **Cladded Tube sheet. Which side is clad?**

☐ **Other**

Specification Change:

Other: Manual field data has been historically inaccurate due to the elevated temperatures. Recommend using wireless corrosion probes for monitoring.

APPENDIX I
PRE-START-UP SAFETY REVIEW FOR MAINTENANCE SHUTDOWN CHECKLIST

PSSR Number: 6460

Project/Equipment Description:

4 Crude PSSR 2011 Major

The PSSR Team Leader convenes a meeting of a PSSR Review Team prior to start up of the facilities covered by this PSSR. The Team Leader chooses team members based on their understanding of the MOC (use the list below as a memory jogger). This team conducts a walkthrough if there is altered or additional equipment. The team verifies all MOCs are completed and confirms the change is ready to start up. The team generates a list of incomplete items identifying item owner and timetable for completion. Representatives acknowledge below their organization's work is complete (except as noted on the list below), that current QA programs were followed and that records will be retained for audit purposes.

Business Unit Rep: Curry, David P. **Date:** 11/10/2011

Determines all MOC's associated with this facility are approved for Start-up

Maintenace Shutdown Supervisor Rep: Lackey, Mark W. **Date:** 11/8/2011

Certifies that all planned and unplanned work required for Start-Up in complete except as noted on the list below

Verifies that existing quality assurance progress (e.g. PMI, Metal Craft Quality Assurance, VOC valves, Loop checks) were followed

Put maintenance checklists and records in files for audit purposes

Other PSSR Review Team Members: (include organization and name):
Examples of other organizational groups that may be included for shutdowns where they have significant input: Engineering, Plant Protection, Utilities, Environmental and Safety, IMI, or inspectors.

Organization	Name	Date
Impact	Greenfield, Matthew R.	11/11/2011
Inspection	Beauregard, John T.	11/10/2011
DED	Corson, Andrew S.	11/10/2011

Miscellaneous Comments:

FER had no repairs required in C-1100 during this outage. Number 4 S/c piping replacements are complete and accepted by B31.3 piping standards.

Area Bussiness Manager Responsibilities:

- Verifies that operating procedures are in place for this particular Start-Up.
- Verifies that affected operating personnel are trained for this particular Start-Up.
- Confirms Start-Up checklists (i.e., initialed Start-Up/PreStart-Up section of Operating Procedures and referenced checklists such as blind lists) will be completed and put in files for audit purposes.

Incomplete items showing owner and timetable for completion (attach additional pages as necessary):

Exception	Owner	Comp. By	Comp. On	Notified
MOC PSSR items from 23282	Rojo, Raquel V.	Rojo, Raquel V	########	#######
complete PSSR items for sub systems	Massaro, Vincent R.	Massaro, Vince	########	#######
C7-84 PRD needs to be installed	Lenker, Ronald L.	Lenker, Ronald	11/7/2011	#######
cu	Massaro, Vincent R.	Massaro, Vince	########	#######
BE102-E3 Need Insulation	Massaro, Vincent R.	Lackey, Mark	12/1/2011	#######
install 11FV043	Massaro, Vincent R.	Massaro, Vince	11/8/2011	#######
BE349-01 remove hydro blind and install TI	Massaro, Vincent R.	Oneill, Patrick	11/6/2011	#######
BE349-i1 Cracked S/G	Massaro, Vincent R.	Oneill, Patrick	11/6/2011	

APPENDIX I
PRE-START-UP SAFETY REVIEW FOR MAINTENANCE SHUTDOWN CHECKLIST

PSSR Number: 6460

Project/Equipment Description:

4 Crude PSSR 2011 Major

BE125-E1 Hook Up tracing / Install Support	Massaro, Vincent R.	Massaro, Vince	t#######
11PC111, 11PC211, 11PC622 Min Fire B/P Vlv's need to modify limit switches.	Burkhart, Elijah R.	Burkhart, Elija	t####### #######
V-1100 LVL Bridal hitting deluge system, needs to be adjusted	Massaro, Vincent R.	Massaro, Vince	t####### #######
Remove blind upstream ofK-1100 Disch. To C-1190 stanchon #6	Massaro, Vincent R.	Massaro, Vince	11/8/2011 #######
Complete overflash demo work includes permanent blinds at C-1100 and Boiler makers on open line	Massaro, Vincent R.	Massaro, Vince	t####### #######
FV000 steam tracing needs to be connected and insulated	Massaro, Vincent R.	Massaro, Vince	t####### #######
Remove Staging	Massaro, Vincent R.	Massaro, Vince	t####### #######
Install PT 002	Massaro, Vincent R.	Massaro, Vince	t####### #######
BE115-E1 K-1179 Seal Flush piping needs to be hooked up.	Massaro, Vincent R.	Massaro, Vince	11/8/2011 #######
Remove Staging	Massaro, Vincent R.	Massaro, Vince	t####### #######
Insulate new piping	Massaro, Vincent R.	Massaro, Vince	t####### #######
BE104-01 Vent line not installed	Massaro, Vincent R.	Massaro, Vince	t####### #######
BE104-03 Install PRD	Massaro, Vincent R.	Massaro, Vince	11/8/2011 #######
BE131-01 Install BM/bleeder	Massaro, Vincent R.	Massaro, Vince	11/8/2011 #######
remove Staging	Massaro, Vincent R.	Massaro, Vince	t####### #######
Install Insulation	Massaro, Vincent R.	Massaro, Vince	t####### #######
staging in plant	Massaro, Vincent R.	Massaro, Vince	t####### #######
Missing insulation cap on BE102-E1 GENVLV-050 300# gate valve pipe at E-1102A/B/C	Massaro, Vincent R.	Lackey, Mark	12/1/2011 #######
E-1102,03,06, 07, 16E/F, C7-95 Recovered oil PRD staging not removed	Massaro, Vincent R.	Massaro, Vince	t####### #######
BE603-01 Crude Feed MOV- actuator needs to be repaired.	Massaro, Vincent R.	Massaro, Vince	t####### #######
11TI571 and TI572 hook up and loop check on E-1107A/B incomplete	Massaro, Vincent R.	Massaro, Vince	t####### #######
P-1101A suction MOV needs electrical hookup and stroke.	Massaro, Vincent R.	Massaro, Vince	t####### #######
E-1107 pipe coating and insulation not installed	Massaro, Vincent R.	Lackey, Mark	12/1/2011 #######
PRD on NH# system blocked in w/ bleeder open upstream until S/U	Preciado, Silvano E.	Preciado, Silva	t####### #######
housekeeping clean up 4 CU switchgear house	Massaro, Vincent R.	Lackey, Mark	12/1/2011 #######
complete QA/QC docs	Massaro, Vincent R.	Massaro, Vince	11/8/2011 #######
remove temp chem clean pipe	Burkhart, Elijah R.	Burkhart, Elija	11/6/2011 #######
remove temp pipe from reboilers	Burkhart, Elijah R.	Burkhart, Elija	11/6/2011 #######
repair valve 130 from list - at P-1195	Burkhart, Elijah R.	Curry, David P.	11/5/2011 #######

APPENDIX I
PRE-START-UP SAFETY REVIEW FOR MAINTENANCE SHUTDOWN CHECKLIST

PSSR Number: 6460

Project/Equipment Description:

4 Crude PSSR 2011 Major

Valve BE-127 not installed (sitting on ground)	Burkhart, Elijah R.	Burkhart, Elija	11/6/2011 #######
Bottom TI lead broken off - try and repair	Burkhart, Elijah R.	Burkhart, Elija	11/7/2011 #######

I recommend this facility be placed in operation:

Facilitator: Curry, David P.

Date: 11/10/2011

Approved for Operation:

Area Business Manager: Curry, David P.

ABU Manager Date: 11/10/2011

Section 1 **MANAGEMENT OF CHANGE (MOC)**

ABU:	Plant:	Year:
D&R	4 Crude	2011

MOC No:	Originator:	Date Issued:	Passport No:	EWO No:
24255	Lee II, Gerald W.	11/22/2011		

Section 2 Reviewer:	MOC Category:	PSM:	MOC Type:	Expiration Date:	Other Temporary Reason
Preciado, Silvano E.	S/D		Temporary	12/31/2016	

Project/Equipment Title: UT Monitor 8" 4 S/C Piping from C-1100 to P-1149/A (955-007-001)

Description of Change:

Inspections will monitor 8" 4 SIDECUT 955-007-001 piping circuit thickness from C-1100 to P-1149/A and replace as needed at next S/D opportunity.

MOC will be required if the change will:

- ☐ Cause the use of different feed, chemicals or catalysts?
- ☑ Cause the use of different process conditions, process control, instrumentation, and protective devices or affect upstream/downstream plants?
- ☐ Cause the use of new or modified equipment [which is other than inkind]?
- ☐ Alter equipment siting, building, trailer locations, roads or fire protection?
- ☐ Require modifying existing and/or developing new procedures?

Section 2 ☐ Simultaneously Begin Construction and Start-up

Stage 1	Pre-Implementation	Dept./Person Responsible	Date Complete	Completed By	References
	Design Review	Gish, Kurt E.			
	Process Engineering Review				
	Instrumentation Review				
	Control System Review				
	Utilities Review				
	Environmental/Regulatory Review				
	Safety/Regulatory Review				
	Building Permits Review				
	Mechanical Review	Leeds, Laura	1/5/2012	Leeds, Laura	
	Inspection Review	Beauregard, John T.	12/2/2011	Beauregard, John T.	
	Metallurgy Review	Prasad, Praneil-Maharaj	#########	Prasad, Praneil-Maharaj	
	Contruction Review				
	Leak Seal Review				
	Relief System Review				
	Infrastructure Review				
	PHA/HSE Review	Preciado, Silvano E.			

Authorization to Implement Change (Begin Construction): Approver: Date:

Stage 2	Pre-Startup	Dept./Person Responsible	Date Complete	Completed By	References
	Procedures Review				
	Communication/Training				
	Pre Start-up Safety Review				

Authorization to Start-Up Change: Approver: Date:

Extension of Temporary Change Approved By: Approver: | Expiration Date: | Extention Reason

Stage 3	Post-Startup	Dept./Person Responsible	Date Complete	Completed By	References
	Communication/Training				
	Process Safety Information				

Change in Place - Reviews, Documentation & Testing Complete: Approver: | Date:

MOC Cancelled: Approver: Date: Cancellation Reason:

Note 1: Emergency request for change should be routed by the Approver on the next working day | Retain Original in Division for five Years

DESIGNS REVIEW CHECKLIST

You have been assigned a Design Engineering Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 24255
Filing Reference
Person Responsible Gish, Kurt E.
Completed by
Date Completed

Project/Equipment Description:

Inspections will monitor 8" 4 SIDECUT 955-007-001 piping circuit thickness from C-1100 to P-1149/A and replace as needed at next S/D opportunity.

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DESIGNS REVIEW CHECKLIST

You have been assigned a Design Engineering Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

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Filing Reference
Person Responsible Gish, Kurt E.
Completed by
Date Completed

Project/Equipment Description:

Inspections will monitor 8" 4 SIDECUT 955-007-001 piping circuit thickness from C-1100 to P-1149/A and replace as needed at next S/D opportunity.

ENGINEERING REVIEW

- ☐ BIN Best Practic
- ☐ Civil & Structural
- ☐ Equipment Data Sheet
- ☐ Equipment Specification
- ☐ Fire Protection
- ☐ Hot Tap
- ☐ P&ID's Change due to New / Modified equipment
- ☐ P&ID's Change - Field condition not matching existing P&ID
- ☐ Plot Plan
- ☐ Seismic
- ☐ SIS Update
- ☐ Temporary Leak Repair

EQUIPMENT REVIEW

- ☐ Columns & Pressure Vessels
- ☐ Compressor, Blowers & Mechanical Equipment
- ☐ Concrete & Steel Structure, Walks and Stair
- ☐ Control Rooms & Building
- ☐ Exchangers, Condensers, Heaters & Cooling Tower
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- ☐ Foundation
- ☐ Furances & Boilers
- ☐ Honeywell
- ☐ Honeywell Process Simulator
- ☐ HVAC
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- ☐ Insulation
- ☐ Noise
- ☐ Piping
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- ☐ Sewers, Roads & Miscellaneous
- ☐ Tanks
- ☐ Update Refinery Relief Study
- ☐ Utility Systems

SUMMARY OF REVIEW*

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DESIGNS REVIEW CHECKLIST

You have been assigned a Design Engineering Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 24255
Filing Reference
Person Responsible Gish, Kurt E.
Completed by
Date Completed

Project/Equipment Description:

Inspections will monitor 8" 4 SIDECUT 955-007-001 piping circuit thickness from C-1100 to P-1149/A and replace as needed at next S/D opportunity.

☐ HVAC

*When possible include copies of documents referenced in the summary.

MECHANICAL & Q.A. REVIEW CHECKLIST

You have been assigned a Mechanical & Q.A. Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 24255
Filing Reference
Person Responsible Leeds, Laura
Completed By Leeds, Laura
Date Completed 1/5/2012

Project/Equipment Description:

Inspections will monitor 8" 4 SIDECUT 955-007-001 piping circuit thickness from C-1100 to P-1149/A and replace as needed at next S/D opportunity.

MECHANICAL:

- ☐ Alarm/Sampling Requirements
- ☐ Civil/Structual Engineering Requirements
- ☐ Electrical Engineering Requirements
- ☐ Instrument/Control Engineering Requirements
- ☐ Normal Control Requirements Equipment Specification and Rating
- ☐ Relief and Pressure Relief Devices Setting and Capacity
- ☐ Utilities Connection Permits

REQUIREMENT:

- ☐ API Standards
- ☐ ASME Codes & Standards
- ☑ Inspection/Monitoring Requirements
- ☐ Process Flow/Piping Drawings

Q.A.:

- ☐ ASTM Standards
- ☐ Control & Monitoring Requirements
- ☐ Fitness for Service Evaluation
- ☐ Honeywell Process Simulator
- ☐ IMI Machinery Condition
- ☐ Mechanical Integrity
- ☐ Mechanical Integrity Program
- ☐ MFG-5545, Drafting Work Request attached, if required
- ☐ Positive Materials Indentification
- ☐ Preventative Maintenance Requirement
- ☐ Pre Start-up Safety Review
- ☐ Process Safety Information Limits
- ☐ SOCO Tags
- ☐ UT Testing

SUMMARY OF REVIEW*

External inspection of piping has not been reliable in the past for predicting thickness and failure rates at these temperatures. Recommended that external corrosion probes with wireless technology be installed on line for continuous data collection.

Consistently monitoring 4S/C piping is better than random API inspection. But continous corrosion probes should be installed at earliest convenience for future S/D input

*When possible include copies of documents referenced in the summary.

INSPECTION REVIEW CHECKLIST

You have been assigned a Inspection Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 24255
Filing Reference
Person Responsible Beauregard, John T.
Completed By Beauregard, John T.
Date Completed 12/2/2011

Project/Equipment Description:

Inspections will monitor 8" 4 SIDECUT 955-007-001 piping circuit thickness from C-1100 to P-1149/A and replace as needed at next S/D opportunity.

INSPECTION:

- ☐ Additional Surveillance Required
- ☐ API Standards
- ☐ ASME Codes & Standards
- ☐ ASTM Standards
- ☐ Control Monitoring Requirements
- ☐ Electrical Inspection
- ☐ Fitness for Service Evaluation
- ☐ Honeywell
- ☐ Honeywell Process Simulator
- ☐ Inspection/Monitoring Requirements
- ☐ Non-Destructive Examination
- ☐ Normal Control Requirements
- ☐ Positive Materials Indentification
- ☐ Relief and Pressure Relief Devices Setting and Capacity
- ☐ Texas Nuclear (Metallurgy)
- ☐ UT Testing
- ☐ VOC Tagging Requirements

SUMMARY OF REVIEW*

Inspection will provide a drawing with monitoring locations.
For the P-1149 suction piping t(min):
1.8" pipe:
a.Pressure t(min) = 0.018 inch
b.Structural t(min) = 0.036 inch
2.10" pipe:
a.Pressure t(min) = 0.022 inch
b.Structural t(min) = 0.036 inch

So, I would use the 0.036 inch as the ultimate t(min) for this section of pipe. If piping get below 0.100 inches, we should consider some sort of clamp or wrap. After talking to inspections, this might also be a good location for a corrosion probe.

Hope this helps,

If you have any questions, please do not hesitate to contact me.

Thanks for the help,
Patrick Murphy

*When possible include copies of documents referenced in the summary.

METALLURGY REVIEW CHECKLIST

You have been assigned a Metallurgy Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 24255
Filing Reference
Person Responsible Prasad, Praneil-Maharaj
Completed by Prasad, Praneil-Maharaj
Date Completed 11/28/2011

Project/Equipment Description:

Inspections will monitor 8" 4 SIDECUT 955-007-001 piping circuit thickness from C-1100 to P-1149/A and replace as needed at next S/D opportunity.

Refinery Process Stream: #4 Sidecut

Service Description: Hydrocarbons

Process: Hydrocarbon

Other:

Operating Tempature: **Operating Pressure:**

Design Tempature: **Design Pressure:**

Product Form: **Piping Classification:**

Equipment **Other:**

New Material Type: **Other:**

Connection for Piping Specification: ☐ **Stress Relieved**

Piping Specification Comment:

If Required, what is stress relieving temperature: **and Time**

Exchanger Bundle (Check all Applicable)

- ☐ **U-Bend Tube Bundle** ☐ **U-Bend Area Stress Relieved?**
- ☐ **Finned Tube Bundle** ☐ **Finned Area Stress Relieved?**
- ☐ **Straight Tube**
- ☐ **Tube Sheet and tubes made of different alloys?** **Explain:**
- ☐ **Cladded Tube sheet. Which side is clad?**
- ☐ **Other**

Specification Change:

Other: Manual field data has been historically inaccurate due to the elevated temperatures. Recommend using wireless corrosion probes for monitoring.